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GRANDWAY OPTICAL INSTRUMENTS SERIES

GRANDWAY Optical Testing Instruments

User Manual

Coral-i Solutions

English Version

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FHP FHS FHM FHA FHV VLS series

User Manual

Coral-i Solutions

Shanghai Grandway Telecom Tech.Co.,Ltd
www.grandway.com.cn

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Safety Information

Warnings!

- Never look directly into optical output ports when the laser source is emitting. The Laser output of FHS and FHM are Class I. Invisible laser beam may damage your eyes.
- Do not short-circuit the terminal of AC adapter / charger and the batteries. Excessive electrical current may result in personal injury due to fumes, electric shock or equipment damage.
- Connect DC power cord with the equipment and wall socket properly. While inserting the DC plug, make sure there is no dust or dirt on the terminals and both plugs are fully seated. Incomplete engagement may cause fuming, electric shock or equipment damage and may result in personal injury.
- Do not operate the equipment near hot objects, in hot environments, in dusty/ humid atmosphere or when condensation is present on the equipment. This may result in electric shock , product malfunction or poor performance.

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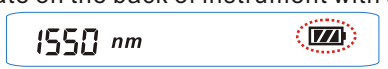
Power Supply

1. Discharged batteries

There is a battery indicator on the screen to show the remaining charge. There are four possibilities the indicator may show, full, with 2 blacks, with 1 black and empty. If an empty battery indicator flashes it means the power is almost out, and that is when you should recharge the batteries by connect the AC adapter with the instrument. If the discharged batteries reach their limitations after long-time use, please replace them with new ones. To replace the batteries, please remove the battery plate on the back of instrument with a screwdriver.



When the battery charge is extremely low to supply the necessary power, the instrument will automatically switched off.

Note: 1 The AC indicator is not displaying when power is supplied by battery.

2 To eliminate the possibility of acid leakage, please take out the battery if the unit is not used for a long time.

2. AC operation

If the instrument is mainly used at one location, e.g. in a laboratory or test department, the AC adapter can be used to power it instead of batteries. There is a DC input jack on the bottom side of the F2HP instrument When the AC adapter is plugged in, the AC Indicator on the LCD will be displayed.

Note: 1 When AC adaptor is used, make sure do **not** place **un-rechargeable** batter**ies** inside.

2 Make sure that local AC voltage is in the range of our operating voltage. E.g. Input:AC 100-240V,50-60Hz.

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3. Power Supply for FHP1 and FHS1 series.

There are battery indicator and power plug on the screen to show the power supply. When you use the DC 5v charger, there is no battery indicator on the screen. When you disconnect the DC 5v charger, the adapter indicator will disappear on the screen.

When you use the battery, the battery indicator on the screen will show the remaining charge. An empty battery indicator means the power is almost out. When the battery charge is extremely low to supply the necessary power, the instrument will be automatically switched off after several beeps of the buzzer. Please change the battery or recharge it

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User's Guide to the FHP2

Optical Power Meter

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1 Introduction

The FHP2 series are full featured palm sized optical power meters designed for use with an optical laser source to perform optical loss measurements on optical fiber cables. The FHP2 series are lightweight and are controlled by microprocessor. Utilizing state-of-the-art SMT in its manufacture, optical connections to the FHP2 are made via the universal adapter interface on the top of the unit. The instrument has 6 working wavelengths to totally satisfy your needs.

It can be extensively used in telecommunication projects and other situations where optical power of wavelengths close to infrared ray needs to be measured.

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2 Specifications

Optical Specifications

Model	FHP2A02/FHP2A04	FHP2B02/FHP2B04
Measuring Range (dBm)	-70~+10	-50~+26
Resolution	0.01dB/dBm; 0.0001uW	
Calibration Wavelength (nm)	850/1300/1310/1490/1550/1625	
Detector	InGaAs	
Precision	±5% ①	
Operating Wavelength (nm)	700~1700	
Power	2*1.2V Ni-MH batteries; AC adapter for continuous use	
Wavelength Recognize ②	Yes	
Tone Detection (Hz) ②	Yes	
Back Light	Yes	
Auto Power Off	Yes	
Reference Value	Yes	
Connector	FC/SC/ST interchangeable connectors for PC and APC	
USB and software support	Available for FHP2A04	Available for FHP2B04
Data Storage	999 records for FHP2A04 & FHP2B04	

Note ① ±5% is effective under 1550nm, CW, 23℃±3℃, humidity≤70%
② Input power >-30dBm for FHP2A series; Input power>-20dBm

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General Specifications

Operation Temperature	-10°C~+50°C
Storage Temperature	-20°C~+70°C
Humidity	< 90%
Size(H*W*D)	160*76*45(mm)
Weight	about 265(g)

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3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest that you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHP2 are as follows:

- Main unit
- User's Guide
- Quality Check Report
- 2*1.2-volt Ni-MH Batteries
- Carrying Case
- AC Adapter
- Connectors(Interchangeable FC ,SC ,ST connectors)

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

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4 Operation

4.1 Display and controls

4.1.1 Keypad

The FHP2 keypad is used to access a wide range of instrument functions.

FHP2A/B02

NO.	Key	Function
1	>2s PERM ON OFF	Switches instrument on / off. Long keypress while powering on to activate the instrument without Auto-off function.
2	λ	Selects measurement wavelength in sequence of 850nm,1300nm 1310nm, 1490nm,1550nm and 1625nm.
3	dBm/ dB/mw	Switches measurement unit among dBm,dB and mw.
4	>2s SET REF	Short keypress to display reference level of present test wavelength. Long keypress to set a new reference level of present test wavelength.
5	☼	Switches backlighting on / off.

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FHP2A/B04

NO.	Key	Function
1	>2s PERM ON OFF	Switches instrument on / off. Long keypress while powering on to activate the instrument without Auto-off function.
2	λ	Selects measurement wavelength in sequence of 850/1300/1310/ 1490/1550/1625nm and to activate auto-wavelength recognition(TWIN).
3	dBm/ dB/mw	Switches measurement unit among dBm,dB and mw.
4	>2s SAVE LOAD	Long keypress for 2s to store the current test value; short keypress to display the record.
5	>2s SET REF	Short keypress to display reference level of present test wavelength. Long keypress to set a new reference level of present test wavelength.
6		Switches backlighting on / off.

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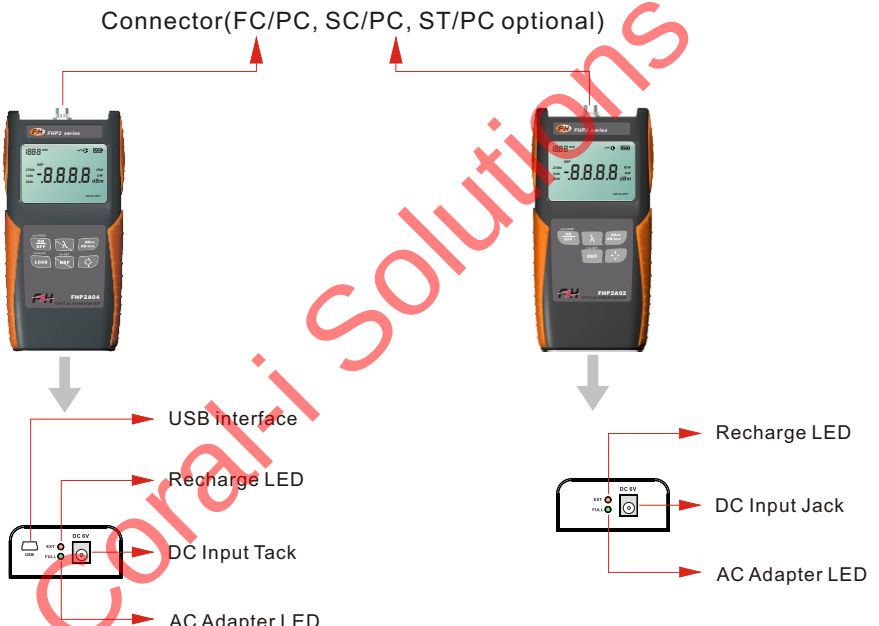
4.1.2 Back



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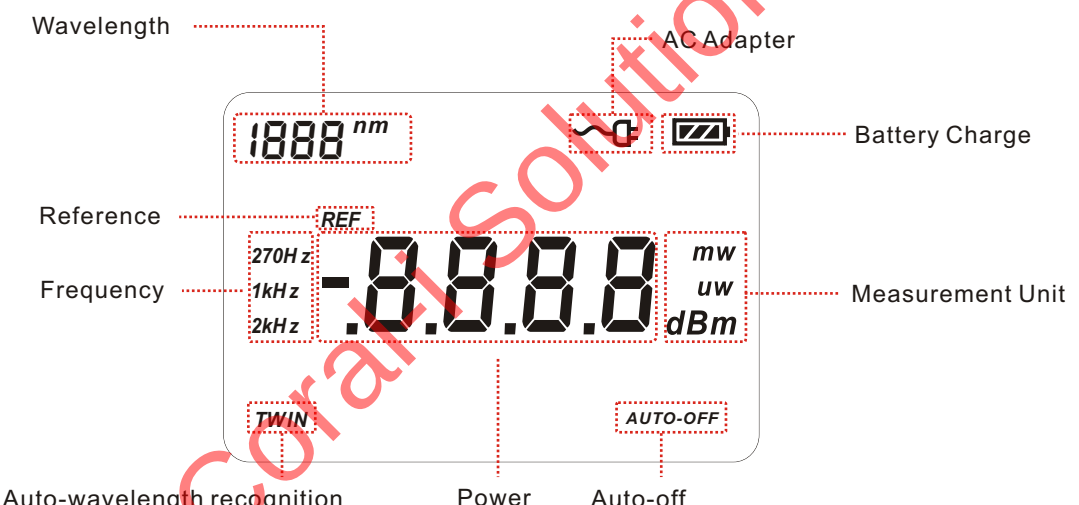
Recharge LED lights up when recharging the batteries.
AC Adapter LED lights up when recharging finishes

4.1.3 LCD



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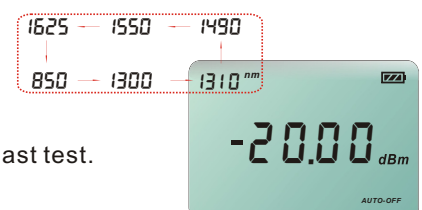
4.2 Turning the instrument on and off

Press the “ON/OFF” key briefly.
The instrument powers on, and backlighting switches on.
Please check the battery capacity if it fails.
Press the “ON/OFF” key briefly again.
The instrument powers off, and backlighting switches off.
Note: Auto-off function

1. The instrument powers off automatically if no keypress in 10 minutes.
2. Press the “ON/OFF” key for about 2 seconds to power on the instrument with “Auto-off” function deactivated.

4.3 Setting the wavelength



Press the “λ” key repeatedly until the desired wavelength is displayed. You can select from six optional wavelengths: 850nm, 1300nm, 1310nm, 1490nm,1550nm,1625nm.
The instrument defaults to the wavelength which the user set in the last test.

4.4 Turning on the wavelength recognition function-- “TWIN” function

Long keypress λ is to activate the auto-wavelength recognition and the "TWIN" will show on the LCD. Short keypress λ is to close the "TWIN".
When used with the FHS2 Series optical laser source, the wavelength will shift automatically according to the output wavelength of the laser source

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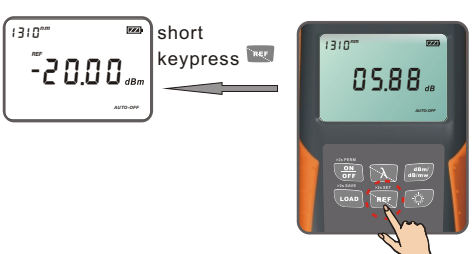
4.5 Switching measurement mode

There are three measurement units you can choose by pressing the “dBm/dB/mW” key repeatedly, dB, dBm,mW.

4.6 Setting reference value

1. Press the “REF” key to display the stored reference value for the current wavelength and a sign of “REF” will be displayed on the screen to indicate that it is a reference value. The displayed value only lasts 1 second.

2. Press and hold the “REF” key over 2 seconds to store the presently measured value as the new reference value for the current wavelength. During the process the “REF” sign flashes twice on the screen and buzzer sound is heard. Once the new reference level is set, the FHP2 switches to the dB measurement mode. The displayed value only lasts 1 second.



Note: 1. Long keypress REF for over 2 seconds, the unit will be shifted to "dB" automatically.

2.When the input laser power is modulated laser source, it will affect the setting of REF value. Please guarantee the input laser source is CW laser when setting REF value.

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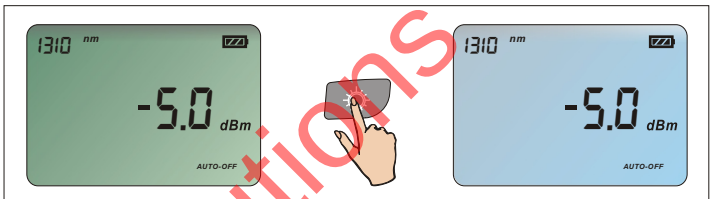
4.7 Switching backlighting of the LCD on and off

Press the backlighting key.
Backlighting switches on.
Press the backlighting key again.
Backlighting switches off.



4.8 Frequency detecting

If the tested wavelength is carrying a tone of 270Hz, 1kHz, or 2kHz, the respective frequency indicates on the screen.

4.9 The overflow of the measured power value

If the measured power value is too high, the LCD screen will display “HI”.

If the measured power value is too low, the LCD screen will display “LO”.

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4.10 The storage of the current test value(For FHP2A04 and FHP2B04)

Press >2s SAVE LOAD key over 2s, the SAVE flashes on the screen once with the sounds of the buzzer. It indicates the setting is finished. It will display the stored value and the serial number of the storage. Then, the FHP2A will return to the test state automatically.

4.11 Check the storage records(For FHP2A04 and FHP2B04)

Press >2s SAVE LOAD key, it will display the latest record.

Press λ key, it will browse the forward records.

Press >2s SET REF key, it will browse the afterward records.

Press >2s SET REF + ☼ key, it will delete all the records.

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User's Guide to the FHS2 Series

Multi-wavelength Laser Source

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1 Introduction

The FHS2 laser source offers excellent stability, portability and facile adjustments for accurate optical fiber testing. Single output connector serves multi-wavelengths--850nm,1300nm 1310nm,1490nm, 1550nm.

FHS2 can be used to test single mode optical fiber of long distance and local network. Also it can work with optical power meter to measure the loss of optical fiber.

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2 Specifications

Optical Specifications

Model	FHS2D02	FHS2D03	FHS2T01
Output wavelength(nm) ①	1310&1550±20nm	850&1300±20nm	1310&1490&1550±20nm
Laser	Class I		
Spectral Width	3nm typical value		
Long term Stability(15min) ②	±0.05dB@1300,1310 ±0.1dB@850,1490nm		
Short term Stability(8hr) ②	±0.2dB@850,1490nm ±0.1dB@1300,1310,1550nm		
CW output power	-5.0dBm±1dB		
Modulated Wavelength	270Hz,1kHz,2kHz		
Available Connector	FC/PC,SC/PC,ST/PC interchangeable connectors (APC is avaiable at the time of ordering)		
Power	2 units of AA rechargeable battaries		

NOTE: ① ±5% is effective under 1550nm, CW, 23℃±3℃, humidity≤70%

② 25 min preheat @ 25℃

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General Specifications

Operation Temperature	-10 ℃~+50 ℃
Storage Temperature	-20 ℃~+70 ℃
Humidity	<90%
Size(H×W×D)	160mm×76mm×45mm
Weight	About 0.26 kg(including batteries)

NOTE: Please be aware that Grandway will not be responsible for the damage caused by customer's improper usage of AC power supply, especially when the instrument is working by internal batteries. The working hours of instrument might show a difference under a different circumstances and batteries status

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3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest that you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHS2 are as follows:

- ≫ Main unit(including battery)
- ≫ Quality Check Report
- ≫ DC 6V Adapter
- ≫ Carrying Case
- ≫ User's Guide
- ≫ Connectors(FC/PC,SC/PC,ST/PC)

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

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4 Operation

4.1 Display and controls

4.1.1 Front(Panel Board)

No.	Key	Function
1	λ	Wavelength Shifting Key: Switches working wavelength.
2	CW/Hz	Modulated Wavelength Shifting Key: Switches modulated wavelength and continuous wavelength.
3	▲ ▼	Output Power Increase and Decrease: Increase or decrease output power by 0.1dB and the adjustable range is ±3dB.
4	TWIN	SINGLE: Auto-wavelength recognition is off. TWIN: Auto-wavelength recognition is on.
5	☼	Switches backlighting on/off.
6	>2s PERM ON OFF	Switches Instrument on/off. Long keypress while powering on to activate the instrument without Auto-off function.

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4.1.2 Back & top

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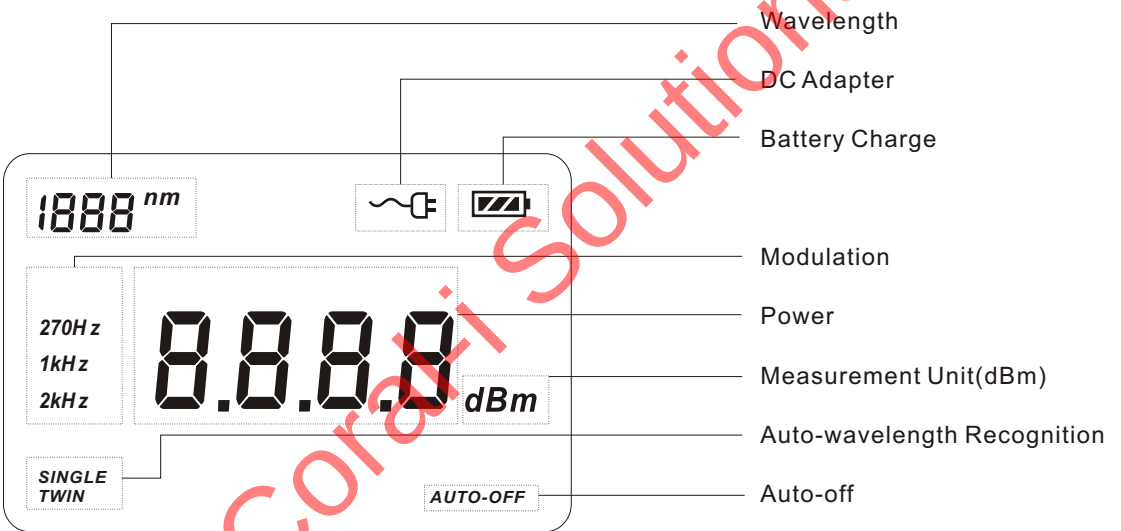
4.1.3 LCD



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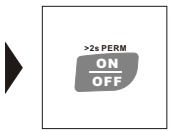
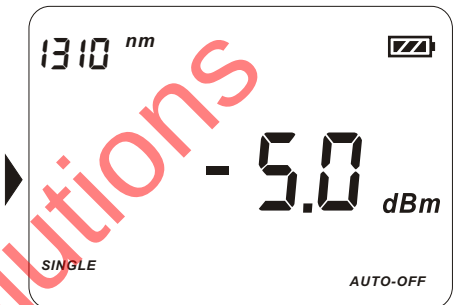
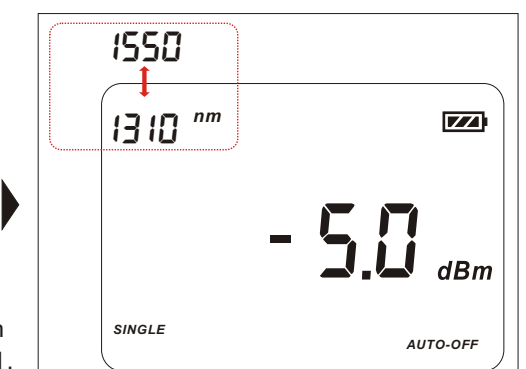
4.2 Turning the instrument on and off





Press the “ON/OFF” key briefly.
The instrument powers on.(See the figure)
Press the “ON/OFF” key briefly again.
The instrument powers off.
Note: Auto-off function
1 The instrument powers off automatically if no key press in 10 minutes.
2 Press the “ON/OFF” key for about 2 seconds to power on the instrument with "Auto-off" function deactivated.

4.3 Switching the wavelength



Press the “λ” Key to switch the wavelength between13100nm,1550nm for FHS2D02,850nm,1300nm for FHS2D03,1310nm,1490nm and 1550nm for FHS2T01.

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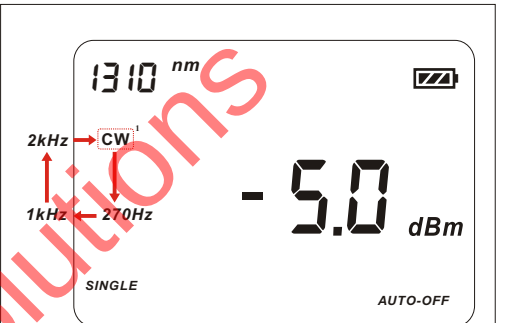
4.4 Frequency Output

The instrument defaults to CW when it switches on. When it is set to CW, there is no frequency on display.
Press the "CW/Hz" Key to select the output among 270Hz, 1kHz and 2kHz.



1."CW" is not displayed on the LCD

4.5 Auto-wavelength Recognition

Press the "TWIN" Key to turn on and off the auto-wavelength recognition function.

Note:1). It is suggested to turn off the "TWIN" code when you do not use it. The optical power output of laser source will be fluctuated.
2). The function of "TWIN" and Modulation cannot work together. When the "TWIN" is on, modulation of laser source module is closed automatically.
3). Wavelength will be shifted automatically according to the recognition when the "TWIN" of power meter module is on. In another word, the modulated signal of 270Hz, 1kHz and 2kHz cannot be recognized and received at the moment.

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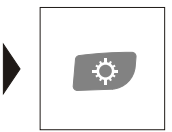
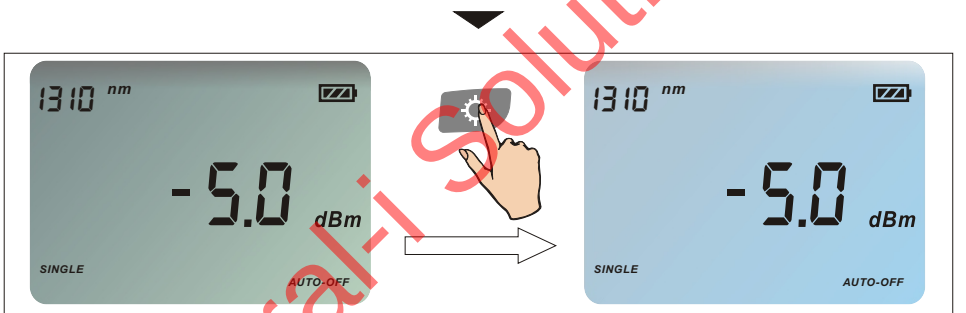
4.6 Switching backlighting of the LCD on and off



Press the backlighting Key to switch the backlighting of the LCD on and off.



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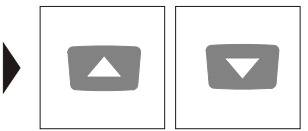
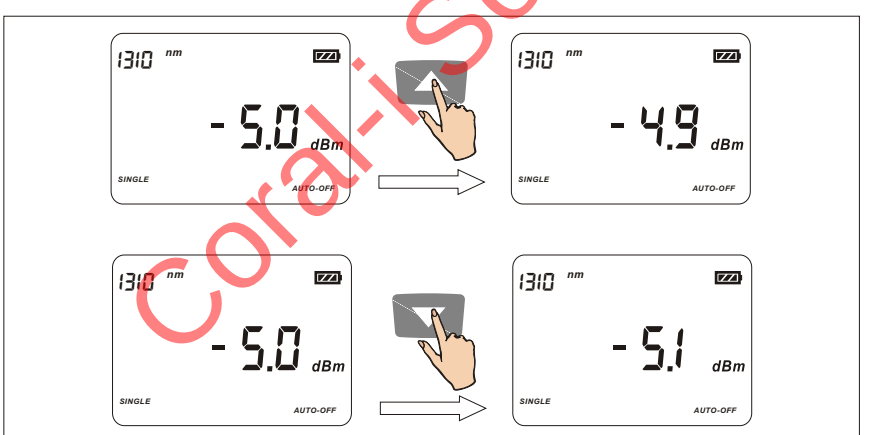
4.7 Setting the output power



Press the “▲” key to to increase the output power. The measurement range is from -2 dBm to -8 dBm. Each time you press it , the value increases by 0.1 dBm.

Press the “▼” key to decrease the output power. The measurement range is from -2 dBm to -8 dBm. Each time you press it, the value decreases by 0.1 dBm.



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4.8 Connecting with Optical Power Meter

It can work with optical power meter to measure the loss of optical fiber accurately.

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User's Guide to the FHP1A/B02

Mini Optical Power Meter

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1 Introduction

The FHP1 series are full featured mini sized optical power meters designed for use with an optical laser source to perform optical loss measurements on optical fiber cables.
Utilizing state-of-the-art SMT in its manufacture, optical connections to the FHP1 are made via the universal adapter interface on the top of the unit. The instrument has 6 working wavelengths to totally satisfy your needs. It can be extensively used in telecommunication projects and other situations where optical power of wavelengths close to infrared ray needs to be measured.

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Main Features:

- Small size with light weight, saving power and easy to carry
- Supply with linear and logarithmic optical power display

2 Specifications

Optical Specifications

	FHP1A02	FHP1B02
Calibrated Wavelength (nm)	850/1300/1310/1490/1550/1625	
Detector Type	InGaAs	
Connector	FC/PC SC/PC ST/PC Universal	
Accuracy ①	± 0.35dB±10nW	
Resolution	0.01dB	
Linearity	±5%	
Auto Power Off	Yes	
Back Light	Yes	
Reference Value	Yes	
Measuring Range(dBm)	-60 to +3	-40 to +23
USB Interface	N/A	
Data Storage	N/A	
Wavelength Recognize	N/A	
Tone Detection (Hz)	N/A	

Note: ① Valid at 1550nm, CW,23±3℃, Relative Humidity ⩽70%, with an FC connector.

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General Specifications

Operating Temperature	-10°C to +50°C
Storage Temperature	-20°C to +70°C
Power Supply	1pcs*Li-ion Battery; 5V AC/DC Adaptor
Dimension (mm)	115L*62W*30H
Net Weight	140g

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3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHP1 are as follows:

- Main Unit
- Carrying Case
- 5V AC/DC Adapter
- FC/PC, SC/PC,ST/PC Interchangeable Connectors
- User's Guide
- 1pcs of Li-ion Battery
- Quality Check Report

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

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4 Operation

4.1 Display and controls

4.1.1 Keypad

The FHP1 keypad is used to access a wide range of instrument functions.

NO.	Key	Function
1	>2s PERM ON OFF	Switches instrument on/off. Long keypress over 2 seconds while powering on is to activate the instrument without Auto-off function.
2	λ	Short keypress to display reference level of present test wavelength. Long keypress to set a new reference level of present test wavelength.
3	dBm/ dB/mw	Selects measurement wavelengths.
4	>2s SET REF	Switches measurement units among dBm, dB and mw.
5		Switches backlighting on/off.

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4.1.2 Back

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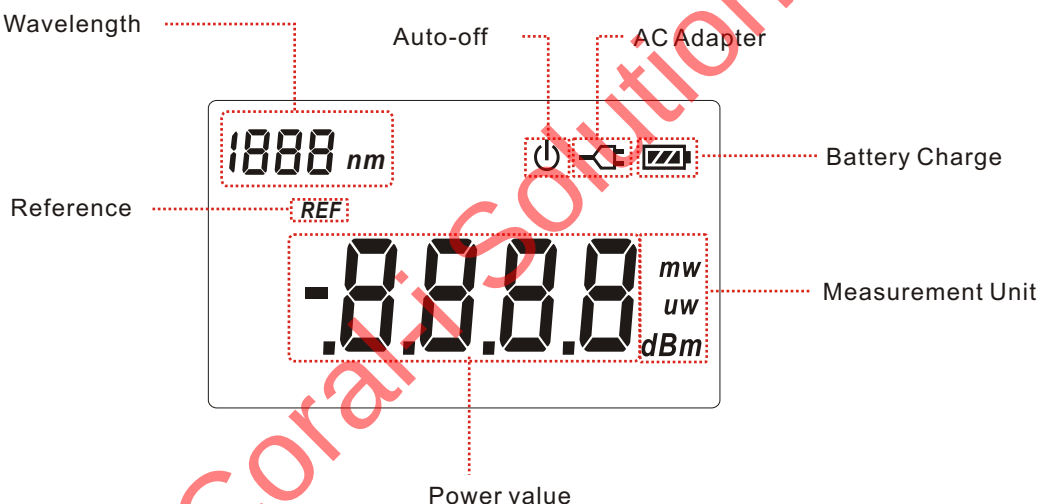
4.1.3 LCD



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4.2 Turning the instrument on and off

4.2.1. Press the "ON/OFF" key briefly.
The instrument powers on, and backlighting switches on with the short beeper of the buzzer.
Please check the battery capacity and the connection of the battery in the battery plate if it fails.

4.2.2. Press the "ON/OFF" key briefly again.
The instrument powers off, and backlighting switches off with the short beeper of the buzzer. When the battery capacity indicator flashes on the LCD, please recharge the battery or change new batteries. Otherwise, the instrument will be damaged by the shortage of the power.

4.2.3. Turn on/off the auto-off function
The instrument powers off automatically if no keypress in 10 minutes.
Press the "ON/OFF" key for about 2 seconds to deactivate the auto-off function and the indicator will be disappear on the LCD.
The instrument will be power off if the battery capacity is too low to support the operation.

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4.3 Setting the wavelength

Press the "λ" key repeatedly until the desired wavelength is displayed. You can select from six possible wavelengths: 850nm, 1300nm, 1310nm, 1490nm, 1550nm and 1550nm. The instrument defaults to the wavelength of 1550nm.

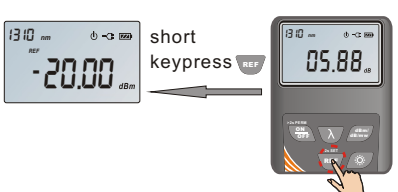
4.4 Setting and checking reference level

4.4.1. Setting the reference level

Press and hold the "REF" key over 2 seconds to store the presently measured value as the new reference level for the current wavelength. Once the new reference level is set, the LCD displays 0.00dB with the beeper of the buzzer and the FHP1 switches to the dB measurement mode.

4.4.2. Checking the reference level

Press the "REF" key to display the stored reference level for the current wavelength and a sign of "REF" will be displayed on the LCD to indicate that it is a reference value. The displayed value only lasts 1 seconds. The instrument switches to the dB measurement mode.



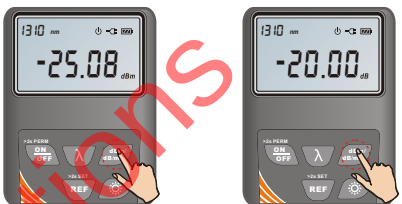
Note: 1. Long keypress REF for over 2 seconds, the unit will be shifted to "dB" automatically.

2.When the input laser power is modulated laser source, it will affect the setting of REF value. Please guarantee the input laser source is CW laser when setting REF value.

Coral-I Solutions

4.5 Switching measurement mode

Press the "dBm/dB/mw" key, you can select three measurement modes: dBm for the power value, dB for the relative value and the mw logarithmic value.



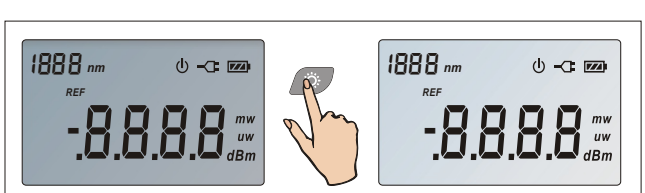
4.6 The overflow of the measured power value

If the measured power value is higher than the highest value of the measuring range,the LCD screen will display "HI".

If the measured power value is lower than the lowest value of the measuring range,the LCD screen will display "LO".

4.7 Switching backlighting of the LCD on and off

Press the backlighting key.
Backlighting switches on.
Press the backlighting key again.
Backlighting switches off.



Coral-I Solutions

4.8 Connection with the optial laser source

Connecting with FHS1D series dual-wavelength laser source, FHP1A02 optical power meter can make accurate measurement of the fiber loss at the largest distance of more than250km(@1550). On-the-spot measurement will differ with the working wavelength, fiber attenuation and the testing environment.

Coral Solutions

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User's Guide to the FHS1D02/03

Dual-wavelength Laser Source

Coral-i Solutions

1 Introduction

The FHS1D series mini-sized dual-wavelength laser sources offer excellent stability and portability for accurate fiber optic testing. Single output port provides stable laser power at dual-wavelength. The compact unit operates in either continuous wave (CW) mode or modulated mode. A low battery indicator reminds the user of replacing the battery.

Main Features:

- Single output, providing with CW and modulation of 270Hz, 1kHz and 2kHz
- Supply with backlighting, recharging battery, LCD screen and auto-off at the low-battery capacity

Coral-I Solutions

2 Specifications

Optical Specifications

	FHS -1D02	FHS -1D03
Output wavelength (nm)①	1310 & 1550	850 & 1300
Emitter Type	LD	
Connector	FC/PC	
Output Stability②	Short Term(15minutes):<0.1dB	Long Term(5Hours or above):<0.2dB
Central Wavelength	1310+/-20nm & 1550+/-20nm	
Spectral Width	5nm	
Output Frequency (Hz)	270,1K,2K	
Output Power	-5dBm	
Auto Power-off	Yes	
Back-light	Yes	

General Specifications

Operating Temperature	-10℃ to +50℃
Storage Temperature	-20℃ to +70℃
Power supply	1pcs*Li-ion Battery;5V AC/DC Adaptor
Dimension (mm)	115L*65W*30H
Net Weight	140g

NOTE: ① ±5% is effective under 1550nm, CW, 23℃±3℃, humidity≤70%

② 25 min preheat @ 25℃)

Coral-i Solutions

3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHS1D02/03 are as follows:

- ≫ Main unit(including battery)
- ≫ Quality Check Report
- ≫ DC 5V charger
- ≫ Carrying Case
- ≫ User's Guide
- ≫ FC/PC(ST/PC, SC/PC optional)

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

Coral-i Solutions

4 Operation

4.1 Display and controls

4.1.1 Front(Panel Board)

No.	Key	Function
1	>2s PERM ON OFF	Switches instrument on/off. Long keypress while powering on to activate the instrument without auto-off function.
2	CW Hz	Modulated wavelength shifting key: switches modulated wavelength and continuous wavelength.
3	☼	Switches backlighting on/off.
4	λ	Wavelength shifting key: switches working wavelength between 1310nm and 1550nm(FHS1D02) or between 850nm and 1300nm(FHS1D03).

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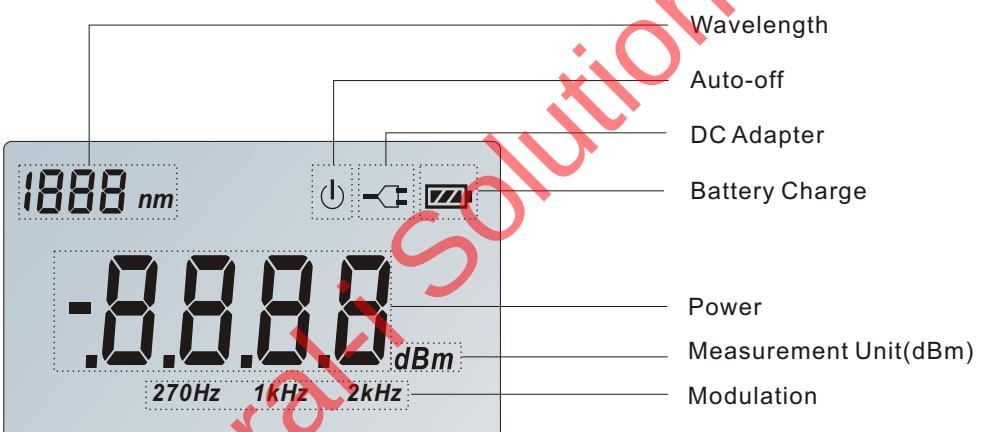
4.1.2 Back & top

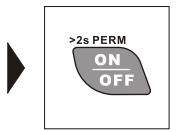
Coral-i Solutions

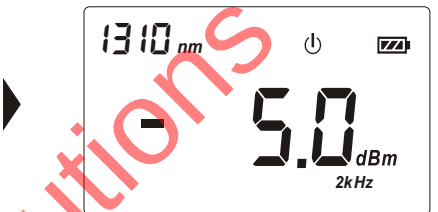
4.1.3 LCD



Coral Solutions

4.2 Turning the instrument on and off

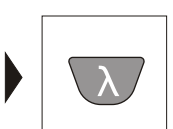


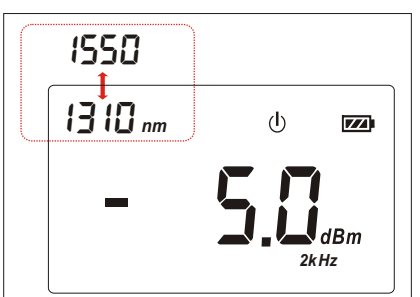


Press the “ON/OFF” key briefly.
The instrument powers on.(See the figure)
Press the “ON/OFF” key briefly again.
The instrument powers off.

Note: Auto-off function
1 The instrument powers off automatically if no key press in 10 minutes.
2 Press the “ON/OFF” key for about 2 seconds to power on the instrument with "Auto-off" function deactivated.

4.3 Switching the wavelength

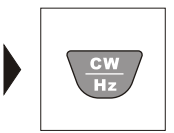




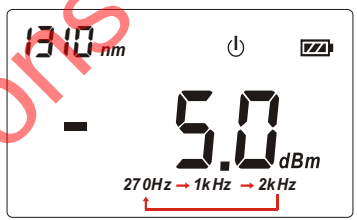
Press the “λ” Key to switch the wavelength between 1310nm and 1550nm.

Coral-I Solutions

4.4 Frequency Output

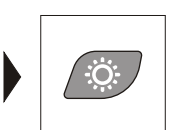


The instrument defaults to CW when it switch on. When it is set to CW, there is no frequency on display.
Press the "CW/Hz" Key to select the output among 270Hz, 1kHz and 2kHz.

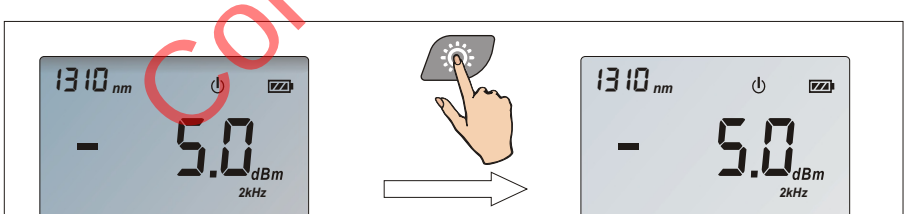


1."CW" is not displayed on the LCD

4.5 Switching backlighting of the LCD on and off



Press the backlighting Key to switch the backlighting of the LCD on and off.



Coral-i Solutions

4.6 Connecting with Optical Power Meter

Connecting with FHP1 series optical power meter, FHS1D series dual-wavelength laser source can make accurate measurement of the fiber loss at the largest distance of more than 250km(@1550).

Coral-1 Solutions

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User's Guide to the FHM2 Series

Optical Multimeter(Optical Loss Test Set)

Coral-i Solutions

1 Introduction

1.1 General Description

The FHM series optical loss test set combines a power meter and a three- wavelength laser source, for optical fiber network installation and maintenance. With the large capacity of data storage, it's very convenient for field testing and transferring the test results to PC through USB interface.

Coral-i Solutions

1.2 Main Features

- Three wavelengths (1310nm, 1490nm and 1550nm) combine in one port;
- The output of laser source stables at -5dBm;
- Laser source supplies CW and modulated 270Hz, 1KHz, 2KHz output;
- Laser source transmits wavelength recognition code;
- Optical power meter displays linearity and logarithmic optical power values;
- Automatic shifting of measurements in optical power meter;
- Automatic wavelength recognition and shifting to the measured wavelength in optical power meter;
- Storage of 999 sets of tested data in optical power meter;
- Screen backlight;
- Rechargeable batteries;
- LCD displayer supplies;
- Auto- off at low voltage;
- Auto-off after 10-min no operation(default);
- Display of battery capacity;
- Auto shut off of charging

1.3 Typical Application

- Transmitter optical power measurements(dBm and W)
- Fiber-link loss testing (dB)
- Componet/ Device insertion loss testing(dB)
- Fiber indentifications with 270 Hz, 1 KHz, 2 KHz signals
- Fiber intallation and maintenance applications
- FTTx: testing of passive optical networks.

Coral-I Solutions

2 Specifications

		FHM2A02	FHM2B02
Power Meter	Calibration wavelength(nm)	850/1300/1310/1490/1550/1625	
	Connector	Interchangeable FC/SC/ST for PC/APC	
	Data storage(items)	999	
	Ref. Value	Yes	
	Display Units	dB / dBm / mW /uW	
	Display precision(dB)	0.01	
	Accuracy ①	± 5%±1nW	
	Wavelength Recognition	1310/1490/1550 ②	
	Tone Detection	270 Hz / 1KHz / 2KHz ②	
	Measuring Range(dBm)	-70 to +10	-50 to +26
Laser Source	Output wavelength (nm)	1310/1490/1550	
	Connector	Interchangeable FC/SC/ST for PC(APC can be taitored at time of ordering)	
	Modulation frequencies	270/1K/2K Hz	
	Output Power	-5dBm±0.5dB	
	Stability Long-term(8h)	±0.1dB@1310/1550nm; ±0.2dB@1490nm	
	Stability Short-term (15min)	±0.05dB@1310/1550nm ; ±0.1dB@1490nm	
	Wavelength Recognizing Code	Yes	

Note ① ±5% is effective under 1550nm, CW, 23℃±3℃, humidity≤70%
② Input power >-30dBm

Coral-i Solutions

General Specification

Auto Power off	✔
Power Supply	2pcs *NiHM 1.2V, 2000mAh; AC/DC Adaptor
PC interface	USB
Battery Life	> 100 Hours (laser off)
Storage Temperature	-20°C~+70°C
Operating Temperature	-10°C~+50°C
Relative Humidity	<90% (Non-condensing)
Dimension (mm)	168L×76W×43H
Weight (Gram) [1]	310

1 Including battery weight

Coral-i Solutions

3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHM2A02 are as follows:

- Main unit(including batteries)
- Quality Check Report
- USB Connecting Cable
- Charger/AC Adaptor
- User's Guide
- Carrying Bag
- PC software
- Interchangeable FC,SC,ST connectors for both power meter & laser sourse.

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

Coral-i Solutions

4 Getting Started

4.1 Introduction of Display, controls panel

Keypad

The FHM2A keypad can be divided into two parts, one is used to control light source and the other is used to access a wide range of functions of power meter.

	NO.	Key	Description
Laser Source	1	1310 1490 1550	LED display of wavelength display on laser source
	2	270 1K 2K	LED display of modulated wavelength display of laser source
	3	LD λ	Wavelength shift key on laser source
	4	TWIN	Switch on/ off the auto-recognition code of laser source and power meter
	5	CW/Hz	Modulated frequency and CW shift Key on laser source
Power Meter	6	DELETE PD λ	Wavelength shift on optical power meter; in “LOAD” mode, it is to delete the value.
	7	dBm/ dB/mW	Unit-shifting key of optical power meter and page-up key in “LOAD” mode
	8	>2s SET REF	Reference value setting key on optical power meter and display current reference value
	9	>2s SAVE LOAD	Load and storage of optical power value
	10		Background light key and page-down key in “LOAD” mode
	11	>2s PERM ON OFF	ON/OFF key, long-keypress for over 2 seconds to close the auto-off function

Coral-i Solutions

Coral-I Solutions

NO.	LED	Description
1	***LD***	1310nm, 1490nm and 1550nm output port(laser source output port)
2	850/1300/1310/ 1490/1550/1625nm	Current wavelength tested by the optical power meter
3	***REF***	Reference value in the optical power meter
4	***270Hz 1kHz 2kHz***	Modulated frequencies identified by optical power meter
5	***SINGLE*** ***TWIN***	SINGLE: Auto-wavelength recognition of laser source and optical power meter is off. TWIN: auto-wavelength recognition of laser source and optical power meter is on.
6	***SAVE*** 888	Number of the current data in the storage of the optical power meter
7	***PD***	Input port of optical power meter(optical power meter input port)
8		State of the USB connection
9		External power supplier indicator
10		Signal of battery capacity. Please make the charge when flashes to show the insufficient battery capacity.The system shut off automatically when the battery capacity is not enough.
11	***mw uw dBm***	Display of value unit.
12	***AUTO-OFF***	AUTO-OFF indicator. AUTO-OFF defaults to turn on when the equipment is on.

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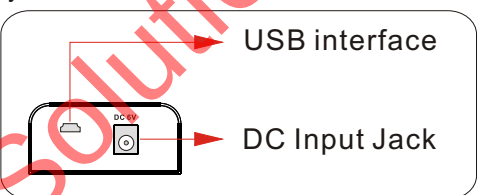
Coral-1 Solutions

4.2 USB interface

You can use the USB interface to connect the instrument with a PC and download the stored data. There is a socket on the bottom side of the instrument right beside the DC input jack and the USB cable supplied can be used to connect it to the USB interface of a PC. When the USB cable is connected, the indicator on the LCD will be displayed.



4.3 Turning the instrument on and off

Press the “ON/OFF” key briefly.
The instrument powers on, and backlighting switches on.
Please check the battery capacity if it fails.
Press the “ON/OFF” key briefly again.
The instrument powers off, and backlighting switches off.

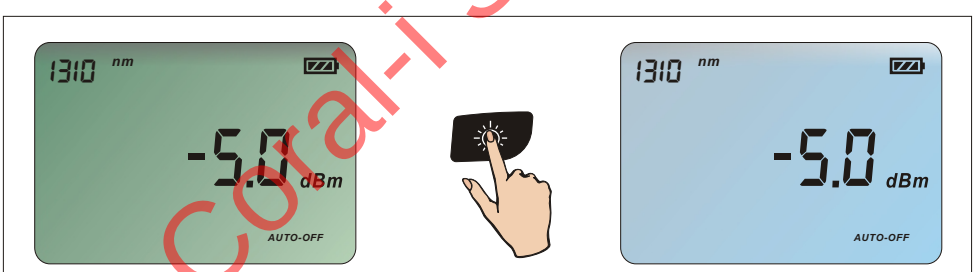
Coral-i Solutions

4.4 Activating the Automatic shutdown function

The instrument powers off automatically if no keypress in 10 minutes.Press the "ON/OFF" key for about 2 seconds to power on the instrument with "Auto-off" function deactivated.

4.5 Switching backlighting of the LCD on and off

Press the backlighting key.
Backlighting switches on.
Press the backlighting key again.
Backlighting switches off.



Coral-i Solutions

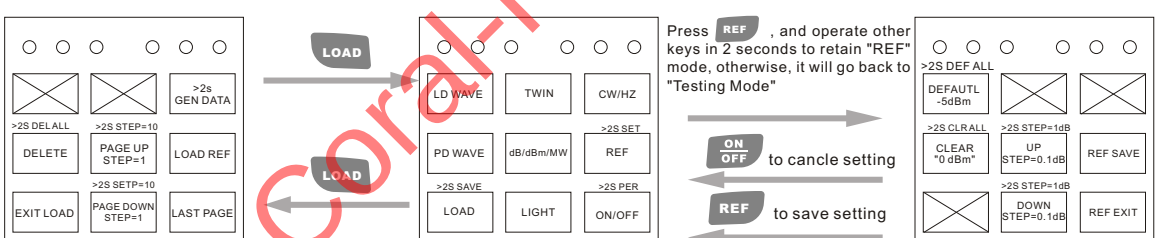
5 Measuring the optical power or loss. (Operation of power meter)

5.1 definition of the keys indifferent Mode

Key definition in History Data Mode

Key definition in Testing Mode

Key definition in Ref. Setting Mode

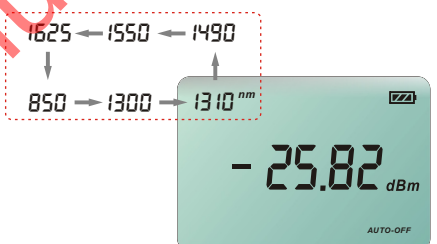


Coral-i Solutions

5.2 Operating inTesting mode

5.2.1 The key DELETE PD λ for shifting the wavelengths on power meter module.

Press the DELETE PD λ to shift among the six wavelengths of 1490nm, 1550nm, 1625nm, 850nm, 1300nm and 1310nm and the corresponding LED will be on. The instrument defaults to 1310nm when it firstly turned on.



Note: the power meter defaults to auto-recognize the modulated signal of 270Hz, 1kHz and 2kHz and display the signal on the LCD. If the signal is CW, it will not display modulated signal on the LCD.

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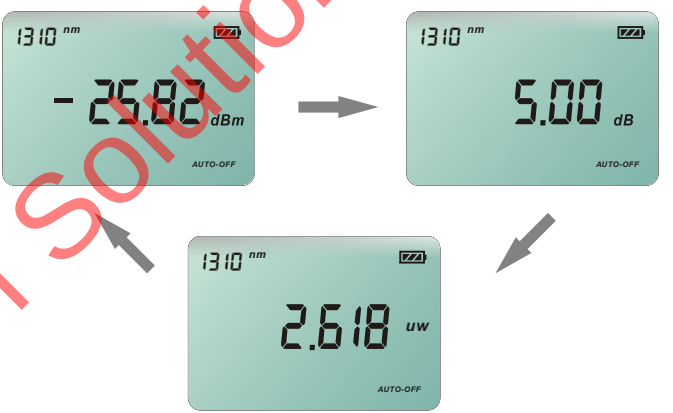
5.2.2 the key dBm/ dB/mW for shifting the units of optical power meter

The power meter defaults to the unit of "dBm". Press the to shift to "dB" and "mW".

Note: 1). "dB" and "mW" are the unit representing the absolute value of tested power value. If the tested power value is less than 1mW in the unit of "mW", the unit will be shifted to "uW" automatically.
2) "dB" is the relative value of testing power value. Firstly, the user should set a reference value. Then, the current value can be compared by the reference one. The formula is "dB"value equals to "the reference value" minus "the current power value in dBm".



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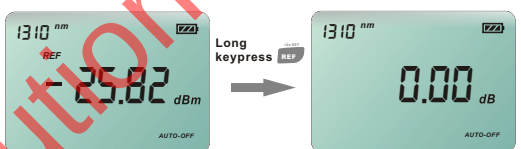
5.2.3 The key >2s SET REF for setting reference value on optical power meter

The reference value defaults to 0.00dBm on optical power meter module. Long keypress the key for over 2 seconds, the instrument will set the current optical power value as the reference. Short keypress the key is to read the current reference value. The instrument will return to the testing state after two seconds without operation. If there's operation, the instrument will shift to the reference editting state. Please refer to the Second Part of operation.



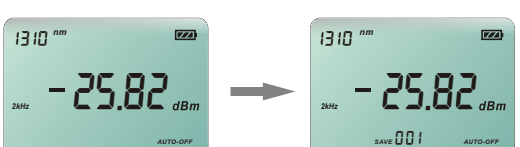
Note: 1. Long keypress REF for over 2 seconds, the unit will be shifted to "dB" automatically.

2.When the input laser power is modulated laser source, it will affect the setting of REF value. Please guarantee the input laser source is CW laser when setting REF value.

5.2.4 The key >2s SAVE LOAD for loading and storing the optical power values

Long keypress the "load" is to store the current values including the wavelength, values, modulation, states and units being tested. It will list and show the number of the current value from "001" to "999" on the LCD.

Short keypress the key is to check the stored data. The detailed description refers to the Part three of operation enter into the "load" mode("history mode). Press the "load" key again to exit the "history records" mode.



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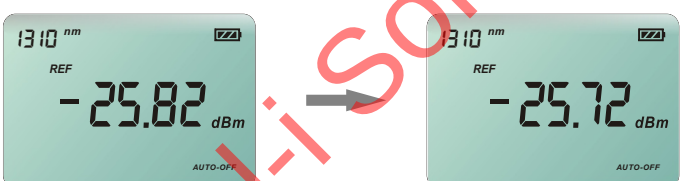
5.3 Operating in Ref. Setting mode

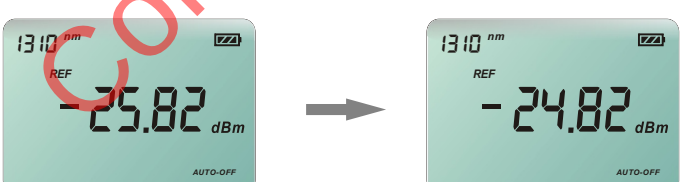
Short keypress the key of "REF" is to check the reference value in the current wavelength. If there is no operation, the instrument will return to the testing state automatically after two seconds. If there is any keypress like following operation, the instrument will enter the editting state of reference.

5.3.1 " dBm/ dB/mW " is the key for increasing the reference value

Short keypress is to increase the current reference value for 0.1dB.



Long keypress is to increase the current reference value for 1dB.



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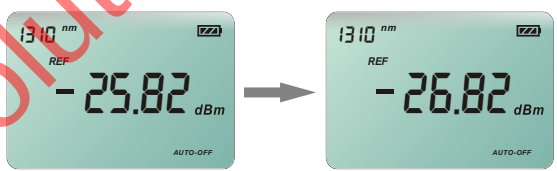
5.3.2 " " is the key for decreasing the reference value.

Short keypress is to decrease the reference value for 0.1dB in the current wavelength.

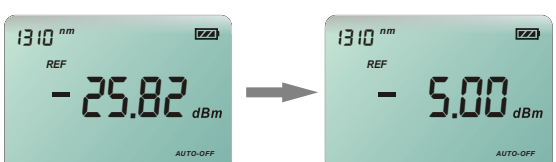
Long keypress is to decrease the reference value for 1dB in the current wavelength.



5.3.3 " LD λ " is the key for setting the reference value to the default one

Short keypress is to set the reference value in the current wavelength to "-5dBm".
Long keypress is to set all the reference values in all wavelengths to "-5dBm".

Note: Setting the reference value to "-5dBm" is to work with the output "-5dBm" of the laser source. Then it can test the attenuation of the circuit.



Coral-i Solutions

5.3.4 " DELETE PD λ " is the key for deleting the reference value

Short keypress is to delete the reference value in the current wavelength to "0.00dBm".
Long keypress is to delete all the reference values in all wavelengths to "0.00dBm".

5.3.5 " >2s SET REF " is the key for storing the current reference setting

Press >2s SET REF is to store the current reference setting in the instrument. The stored data will be saved even the power is cut off. The instrument will return to the measuring state and the unit will return to "dB" after the storage.
Note: the reference value is displayed but not saved before pressing the key "Ref" . No data will be restored if it is not saved by pressing the key before the power is off.

5.3.6 " >2s PERM ON/OFF " is the key for discarding the reference value of the current setting

Press >2s PERM ON/OFF is to discard the reference value of the current setting, and all the setting data are not saved. The instrument will return to the original state. It will back to the measuring state and the unit will be shifted to "dB".

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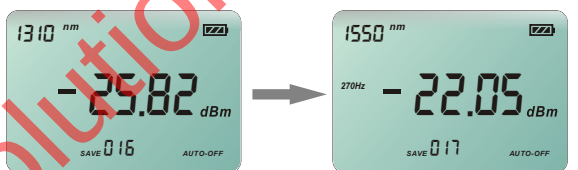
5.4 Operating in History Data mode

Short keypress is to check the stored data and enter into the checking state.

5.4.1 Press dBm/dB/mW is to page up for checking the data numbered from 001 to 999

e.g. The current value is saved as number 001, short keypress is to check the stored value numbered 999, long keypress for over 2 seconds is to check the stored value numbered 990. Note: if the data are saved less than 10 pieces, long keypressing the dBm/dB/mW will make the instrument shift to the last data stored.



5.4.2 Press ☼ is to down the page for checking the data numbered from 001 to 999

e.g. The current value is saved as number 001, short keypress is to check the stored value numbered 002, long keypress for over 2 seconds is to check the stored value numbered 011.
Note: if the data are saved less than 10 pieces, long keypressing the ☼ will make the instrument shift to the very first data stored.

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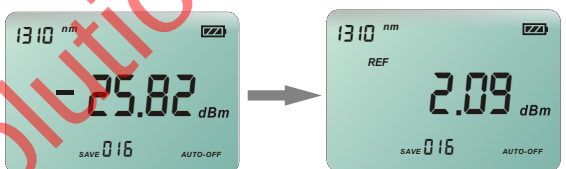
5.4.3 >2s PERM ON OFF is the key for checking the last stored data

Press the >2s PERM ON OFF , you can check the last stored data directly.

5.4.4 >2s SET REF is the key for checking the reference value of current stored data

If the unit of the stored data is "dB", there must be the reference value corresponding to the stored data.
Press >2s SET REF is to check that reference value. If the value is not "dB", it displays "----" on the LCD, which means there are no reference.



5.4.5 DELETE PD λ is the key for deleting the stored data

Short keypress the DELETE PD λ is to delete the current stored data displayed on the LCD. Then, the next piece of stored data will be displayed on the LCD. If the data deleted is the only data being saved in the storage, the instrument will return to the measuring state.
Long keypress the DELETE PD λ is to delete all the stored data and the instrument will return to the measuring state.

5.4.6 >2s SAVE LOAD is the key for exiting the History Data mode

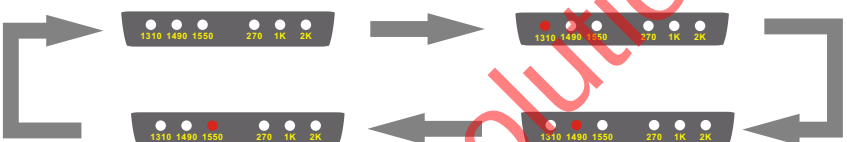
Press >2s SAVE LOAD is to exit the history data mode and back to the measuring state.

Coral-I Solutions

6 Operating of Laser Source

6.1 The key LD λ for shifting wavelengths on laser source module.

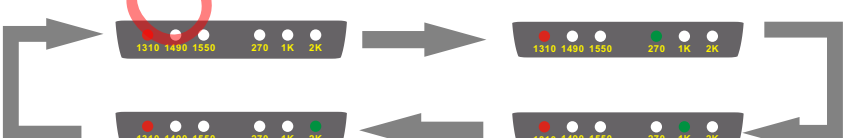
Laser source module defaults to be closed when the user turns on the equipment. Press the LD λ, the wavelength LED of 1310nm, 1490nm, 1550nm will be on circularily or the wavelength LED will be off.



Note: It is suggested to turn off the laser source module to save the power of the instrument.

6.2 the key CW/Hz for shifting modulated wavelength and CW on laser source module.

When the laser source works on any wavelength of 1310nm, 1490nm and 1550nm, press to select the modulation of 270Hz, 1kHz and 2kHz circularily and the LED of modulated wavelength will be on correspondingly. Pressing the key can also turn off the modulation and shift to the CW. Note: the operation of cannot work in the condition that the laser source module on FHM2A02 is closed.



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6.3 The key TWIN for switching on or off the auto-recognition code of laser source and power meter

The auto-recognition and shifting of wavelength can be realized if the FH series intruments are used. Press is to turn on the auto-recognition code and "TWIN" will be displayed on the LCD. Press again is to turn off the code.

Note: 1). the code of "TWIN" is on or off at the same time in the laser source and power meter modules of the FHM2A02.
2). It is suggested to turn off the "TWIN" code when you don't use it. The output of laser source will be fluctuated.
3). The function of "TWIN" and Modulation cannot work together. When the "TWIN" is on, modulation of laser source module is closed automatically.
4). Wavelength will be shifted automatically according to the recognition when the "TWIN" of power meter module is on. In another word, the modulated signal of 270Hz, 1kHz and 2kHz cannot be recognized and received at the moment.

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User's Guide to the FHA2S01/02

Variable Optical Attenuator

Coral-i Solutions

1 Introduction

The FHA2S series digital variable optical attenuator is a compact, portable instrument widely used in fiber link certification and routine maintenance as well as in lab environment.

Features

- Dual-wavelengths calibration
- Adjustable attenuation
- Screen backlight
- Charging supplies
- LCD supplies
- Accurate and quick adjusting the attenuation by key-press
- Auto-off at low voltage
- Auto-off within 10 mins no-operation(default)
- Power supply identification
- Battery capacity display

Coral-i Solutions

2 Specifications

Optical Specifications

Model	FHA2S01	FHA2S02
Working Wavelengths	1310nm/1550nm	
Attenuation Range ①	0~80dB	0~60dB
Max Input Power	24dBm	
Linearity	≤0.3dB	
Accuracy ①	0.2dB @3~30dB 0.5dB @ 30~60dB 1.0dB@60~80 dB	0.2dB @3~20dB 0.5dB @ 20~50dB 1.0dB@50~60 dB
Insert ion Loss	<3dB	
Return Loss	>50dB(PC) >60dB(APC)	
Working time	>10hours(2*size AA)	
Fiber Type	SMF 9/125μm	
Connector	Interchangeable FC/PC, SC/PC, ST/PC connectors. (FC/APC, SC/APC is available at time of ordering)	

General Specifications

Operating temperature	-10˚C to 50˚C
Storage temperature	-20˚C to 60˚C
Relative humidity	0%~95% (non-condensing)
Dimension	160L*76W*45H(nm)
Weight	360g(Battery included)

Note: ① Valid at 1550nm, CW, 23±3˚C ,Reliable humidity≤70%, with FC/PC connector.

Coral-i Solutions

3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHA2S are as follows:

- ≫ Main unit
- ≫ Quality Check Report
- ≫ FC/SC/ST Connectors
- ≫ AC/DC Adapter/Charger
- ≫ User's Guide
- ≫ Carrying Case
- ≫ Battery

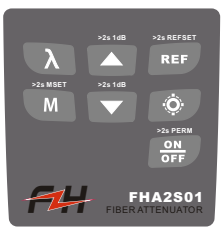
Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

Coral-i Solutions

4 Operation

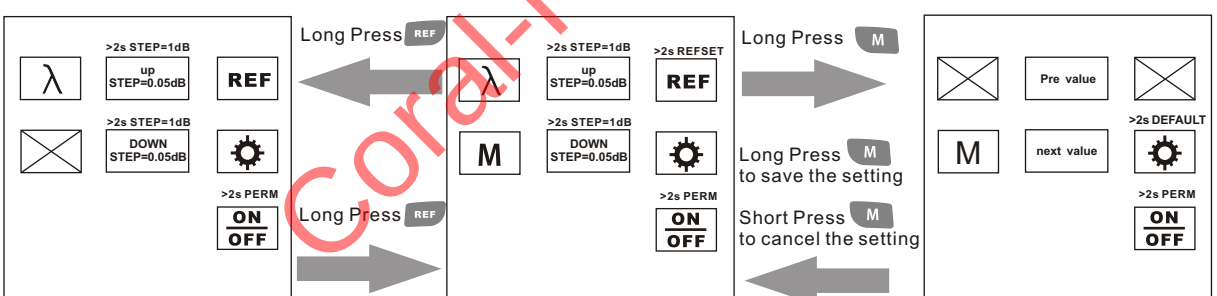
4.1 The key definitions indifferent Modes



Ref Mode

Normal Mode

Presetting value Mode



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4.2 Controls and connectors

NO.	Key	Function
1	>2s 1dB	Shot-keypress is to increase the attenuation step by 0.05dB. Long-keypress is to increase the attenuation step by 1dB.
2	λ	Shift wavelength between 1310nm and 1550nm
3	>2s MSET M	In "normal mode": Long press to enter the "presetting values mode". Short press to change the current value into the presetting values. In "presetting value mode": Short press to cancel setting and go back to "normal mode"; Long term press to save the setting and go back to "normal mode"
4	>2s 1dB	Shot-keypress is to decrease the attenuation step by 0.05dB. Long-keypress is to decrease the attenuation by 1dB/step.
5	>2s REFSET REF	Long press to enter the "REF mode" Short press to check the reference value under "REF mode".
6	☼	Short Press to Turn on or off the LCD background light Long term press in "Presetting value Mode" to set the presetting values into default values.
7	>2s PERM ON OFF	Short keypress to turn on the instrument and long press for more than 2 seconds to close the Auto-off function.

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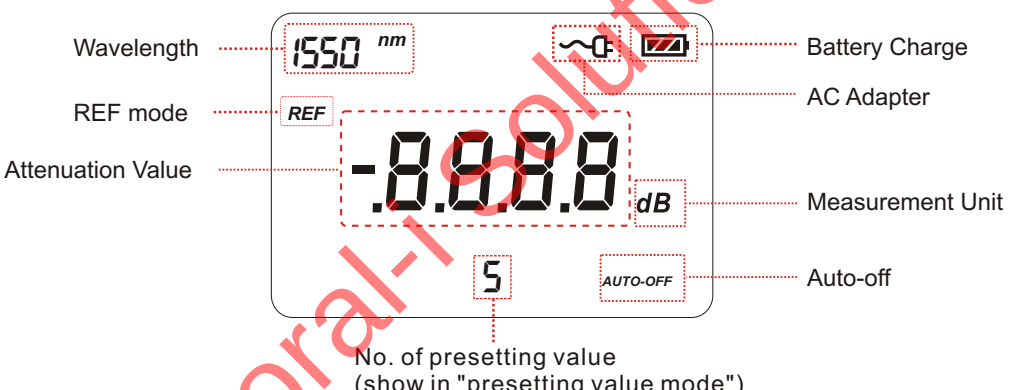
LCD



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Back

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4.3 Turning the Instrument on and off

Press the "ON/OFF" Key briefly, the instrument powers on. If it fails, please check the battery capacity. The instrument powers off after pressing the "ON/OFF" Key.

Note: Auto-off function

1. The instrument powers off automatically if no keypress in 10 minutes.
2. Press the "ON/OFF" key for about 2 seconds to power on the instrument with "Auto-off" function deactivated.

4.4 Turning on the Background Light

Short press key to open or close the background light.

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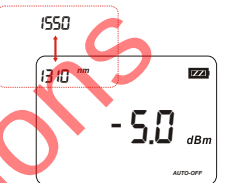
4.5 Operation in "Normal Mode"



4.5. 1 Setting the wavelength

Short keypress the λ key, you can shift the wavelength between 1310nm and 1550nm and the wavelength indicator will change accordingly. The attenuation value will not change when the wavelengths are shifted.

4.5.2 Setting the Attenuation Value

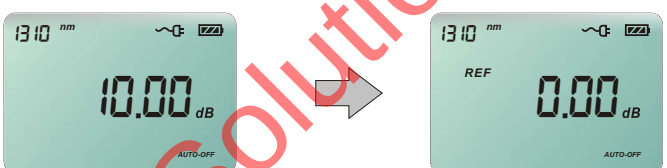
You can press ▲ or ▼ key to adjust the attenuation value. Short-keypress is to increase or decrease the value of 0.05dB/step; Long-keypress is to increase or decrease the value of 1dB/step.

Coral-I Solutions

4.6 Operating in "Ref Mode"

4.6.1 Entering "Ref Mode" and exit "Ref Mode"

Long-keypress REF (>2s) in "Normal Mode" to enter the "REF Mode".
Long-keypress REF (>2s) in "Ref Mode" tol exit the "REF Mode"

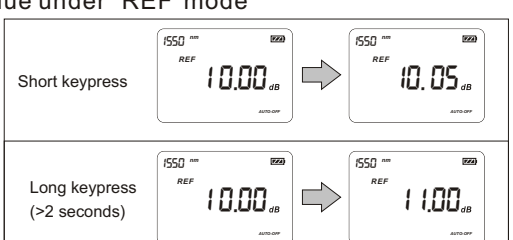


4.6.2 Check the current REF value

Short-keypress the key REF to check the reference value under "REF"mode

4.6.3 Change attenuation value in REF mode

You can press ▲ or ▼ key to adjust the attenuation value. Short-keypress is to increase or decrease the value of 0.05dB/step; Long-keypress is to increase or decrease the value of 1dB/step.



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4.7 Operation in "Presetting values modes"

4.7.1 Entering "Presetting values Mode" and exit "Presetting values Mode"

Long-keypress M (>2 seconds) in "Normal Mode" to enter the "Presetting values Mode".
Long-keypress M (>2 seconds) to save the setting and exit "Presetting values Mode".
Short-keypress M (<2 seconds) to cancel the setting and exit "Presetting values Mode".

4.7.2 Choosing the presetting value.

Press ▲ or ▼ to choose the presetting value, and long press M key to save the current value as the new value for the presetting value . FHA2 can set nine presetting values for each wavelength. In the screen, there is a number to indicator the number of the presetting number.

4.7.3 Setting presetting values into nine "DEFAULT" values.

Long-keypress ☼ , it will change the nine presetting values into the nine "DEFAULT" values. ,which are 0dB,20dB, 30dB, 40dB, 50dB, 60dB.70dB 80dB(70dB and 80dB is not including in FHS2S02)

No. of previous value	1	2	3	4	5	6	7	8	9
DEFAULT value	0dB	10dB	20dB	30dB	40dB	50dB	60dB	70dB	80dB

Coral-I Solutions

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User's Guide to the FHV1A

Visual Fault Locator

Coral-i Solutions

1 Introduction

FHV1 series visual fault locator is visible red laser source for finding breaks and tight bends in optical fibers.It features a rugged, palm design with interchangeable FC,SC,ST connectors. It is power supplied by 3.6V Li-on battery. The Grandway FHV1 visual fault locator can easily locates the breaks in LANs, verify continuity, check the validity of patch cables and look for cracked fiber in splice cases,bad connectors or tight bends in fiber cable. It is a perfect complementary tool for OTDR because of its capability of finding breaks in the dead zone of OTDR.

- Wavelength at 650nm, FC/SC/ST interchangeable connectors
- CW/2Hz modulated output available
- Unique adjustable output function:0dBm, +3dBm,+8dBm.
- LCD screen display
- Backlight Available
- Auto-off (if no operation in 10 minutes)
- Auto-power supply recognition
- Rechargeable battery with battery indication display

Coral-i Solutions

2 Specification:

Model	FHV1A
Laser Class	Class 2 for 0dBm output; Class 3R for +3dBm output; Class 3B for +8dBm output (IEC 60825-1)
Stability(After 15 minutes warm-up)	0.1dB
Output Power	0dBm/+3dBm/+8dBm
Modulated Wavelength	2Hz
Optical Connectors	Interchangeable FC/PC, SC/PC, ST/PC connectors
Power Supply	Rechargeable Li-on Battery(continuously working up to 20 hours)
Power Type	Input:AC 100V-240V 50/60Hz ,
	Output:DC 5V/1A
Working Temperature	-10ºC -- +50ºC
Storage Temperature	-20ºC -- +70ºC
Working Humidity	<90%
Dimension(mm)	115 * 65 * 27(L*W*H)
Weight	140g (Net)

Coral-i-Solutions

3 Preparing for Operation

Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of FHV1A are as follows:

- Main unit
- 3.6V Li-on battery
- Quality Check Report
- User's Guide
- Carrying Case
- Interchangeable FC,SC,ST connectors

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

Coral-i Solutions

4 Operation

4.1 Controls and connectors

4.1.1 Front (Panel Board)

NO	Indicator	Meaning
1	650nm	Display the current working wavelength
2	2Hz	Display the current working modulated tone
3		Activate the Auto-off function when the instrument is in working status.
4		AC power supply
5		Battery indicator
6	Output value(dBm)	Output display in dBm

NO	Key	Function
7		ON/OFF,.If pressing down the key for longer than 2 seconds,the unit will be turned on with "auto-off" function deactivated.
8		Output power switch
9		CW/2 Hz modulated tone switch
10		Backlight

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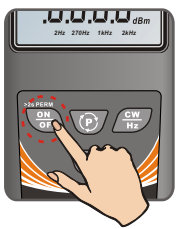
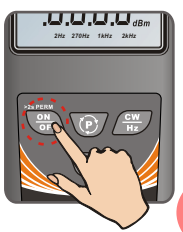
4.1.2 Back

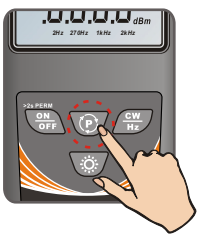
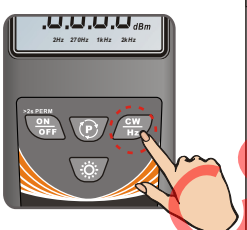
Standard Accessories:Carrying case,Manual,Battery,Power adapter
interchangeable FC/PC,SC/PC,ST/PC adapters

Coral-i Solutions

4.2

①		**Turn On**	
		>2s PERM ON OFF	Press the "ON/OFF" key briefly,the instrument powers on. If the instrument fails to turn on, please check if the battery is properly placed.
②		**Turn Off**	
		>2s PERM ON OFF	Press the "ON/OFF" key >2 seconds,the instrument powers off.
③		**Auto-Off**	
		Default	The instrument powers off if no key pressing happens in 10 minutes.
		Auto-off Deactivated	
		>2s PERM ON OFF	When the instrument is in the state of working,press the key"ON/OFF" longer than 2 seconds to deactivate the Auto-off function.

Coral-1 Solutions

④		**Output power switch** Press the key "P" to switch output power between 0dBm,+3dBm and +8dBm.
⑤		**Frequency Output** The default frequency output is CW(continuous wave), press the key "CW/Hz" to switch the frequency output between 2Hz and CW.

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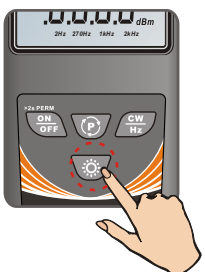
⑥



Backlight

Press this key to turn on and turn off the back light.

⑦

Auto-power recognition

It displays the charging flash when the instrument is pluged in AC power supply.The indicator will show the electric quantity of a battery when the instrument is using battery for power supply.The instrument may fail to be turned on if battery capability is too low.

The instrument may able to recognize whether it is working by AC or DC power supply and shows the corresponding logo on the screen.

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4.3 Trouble shooting:

Malfunction Type	Possible Cause	Recommended solution	Remarks
Failure to turn on/off	No power input	Plug in battery or AC	DIY Available
	Battery exhausted	Charge battery	DIY Available
	Reverse-installed battery	Re-install battery	DIY Available
		(Still doesn't work)	Return to factory
On&off disorder	Low battery	Charge battery or use AC power supply	DIY Available
Inaccurate measuremen	Contaminated connector	Swab the dust by using an alcohol-impregnated thin cotton swab	DIY Available
	Connector unfitted	Re-install the connector	DIY Available
Error display	Humid environment	Try later while it is not too humid	DIY Available
	Magnetic field environment	Stay far away from magnetic field	DIY Available
	Metal dust environment	May cause damage on mainboard	Return to factory
On&off failure	Humid environment	Try later while it is not too humid	DIY Available
	Keypad short circuit	Replace keypad	Return to factory

Warm advice:This test instrument is available for single-mode optical fiber measurement only.

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User's Guide to the VLS-5A/B

Visible Laser Source

Coral-i Solutions

1 Introduction

The VLS-5A/B is compact but powerful visible fault locator designed troubleshoot on fiber optic cables. Light generated by these units will escape from sharp bends and breaks in jacketed or bare fibers, as well as poorly mated connectors. Thus they can identify faults in fiber optic jumper cables, distribution frames, patch panels, and splice trays. The VLS-5A/B locates faults visually by creating a bright red glow at the exact location of the fault on singlemode or multimode fibers. The VLS-5A/B is powered by three No. 7 batteries.

Features:

- Solid and compact, easy to carry
- Superpower output(VLS-5A>=7mW)

Coral-i Solutions

2 Specifications

Model	VLS-5A	VLS-5B
Operating wavelength	650nm±10nm	
Output Power①	>7mW	>1mW
Battery Life(Hours)	10 @2Hz	
Modulation frequencies	2Hz/CW	
Power Supply	Three units of No. 7 battery	
Operating Temperature	-10℃~+50℃	
Storage Temperature	-20℃~+70℃	
Operating Humidity	<90%(Non-condensing)	
Dimension (mm)	Φ27*150	
Net Weight	150g	

1. @CW,23±3℃, RH≤70%,with FC connector

Coral-i Solutions

3 Preparing for Operation

3.1 Unpacking the instrument

Packing material

We suggest you keep the original packing material. Using the original packing material is your guarantee of protecting the instrument during transit.

Checking the package contents

The standard accessories of VLS-5A/B are as follows:

- FC/PC connector
- Manual
- Battery Recharger
- Carrying Case
- Battery

Checking for damage in transit

After unpacking the instrument, check to see whether it was damaged in transit. This is particularly likely if the outer casing is clearly damaged. If there is damage, do not attempt to operate the instrument or to repair it without authorization. Doing so can cause further damage and you may lose your warranty qualification.

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3.2 Battery

Battery Installation

Unscrew the lid on the top of the VLS-5A/B

Take out the cylinder for battery installation

Fit the three units of No. 7 battery into the right position according to the anode and cathode on the cylinder

Put the cylinder into the VLS-5A/B in the direction of the arrow

Screw the lid

Recharge the battery

Put the battery into the charger according to the anode and cathode

Full charge the battery for about 8 hours

Continuous working for 3 to 4 hours after the full-charge

Coral-i Solutions

4 Operation

No.	Key	Function
1	Power Switch	Press the power switch button to turn on or off the instrument .
2	2Hz/CW Switch	Press the button to switch between 2Hz frequency and Continuous Wave.

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Maintenance

- Please disconnect the DC adapter/charger and cover the protective dust cap once you finish using.
- It is a good idea to clean the connector and the instrument when they get dirty through use. Optical cleaning pads and anhydrous alcohol is recommended. And please be careful not to get the detergent inside the instrument.
- To ensure the measurement accuracy, please send the instrument to Grandway Service Center for calibration once a year.

Coral-i Solutions

Warranty

Three Years Limited Warranty

Grandway products are warranted against the defective components and workmanship for a period of three years from the date of delivery to the original customer. Any product found to be defective within the warranty period would be returned to **Grandway** authorized service center for repair, replacement or calibration.

Exclusions

The warranty on your equipment shall not apply to defects resulting from the following:

- Unauthorized repair or modification including battery replacement
- Misuse, negligence, or accident

Returning Product

To return product, you may contact Grandway to obtain additional information if necessary. To serve you better, please specify the reasons for the return.

All delivery and mails should be sent to the following address:

Corol-i Solutions

Shanghai Grandway Telecom Tech. Co., Ltd.
Customer Service
Add:6F, Xin'an building No. 99 Tianzhou Road
Shanghai, 200233 P.R. China

Contact Us

Tel: +86-21-54451260/61/62/63
Fax: +86-21-54451266
E-mail: overseas@grandway.com.cn
Website: www.grandway.com.cn

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